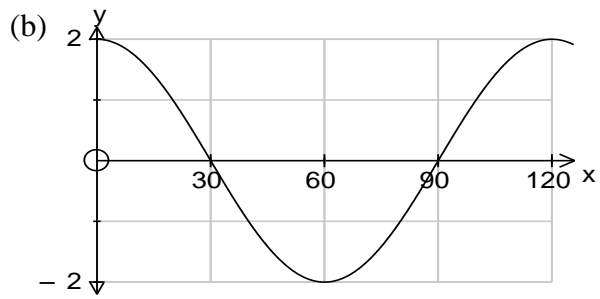
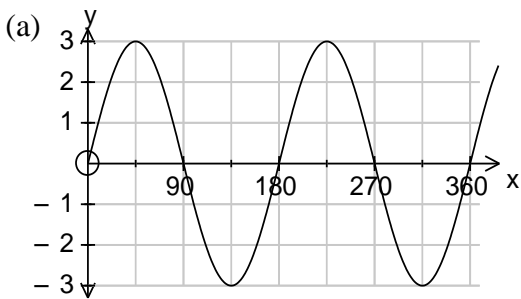


National 5

Homework RE17

1. Identify each of these trig graphs.



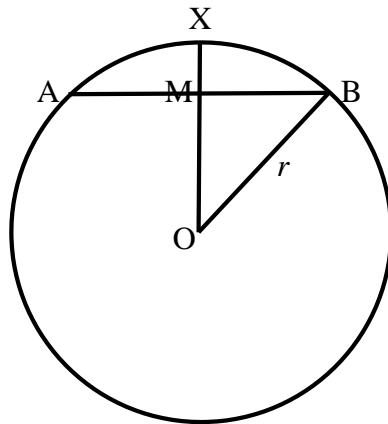
2. (a) Show that $\cos A \tan A = \sin A$.
(b) Show that $\frac{1 - \cos^2 A}{\cos^2 A} = \tan^2 A$.

3. The depth of water in a harbour is given by the formula

$$d = 8 + 3 \sin(30t)^\circ,$$

where d is the depth in metres, and t is the number of hours after midnight.

- (a) Write down the maximum depth and the minimum depth.
(b) Find the depth at 3.15 p.m.
(c) At what time is the first “low tide” after midnight?
(d) When is the depth first equal to 6.5 metres?
4. In the circle below, $AB = 30\text{ cm}$ and $XM = 5\text{ cm}$.
Find, algebraically, the radius of the circle.

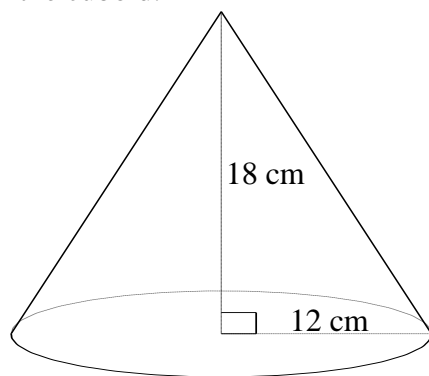


5. Solve by factorisation

(a) $5x = x^2$

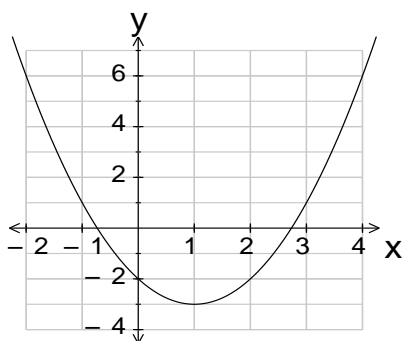
(b) $2x^2 - 5x - 3 = 0$

6. (a) Find the volume of the cone sketched below.
 (b) A cuboid which has the same volume as the cone has length 24 cm and breadth 20 cm. Find the height of the cuboid.

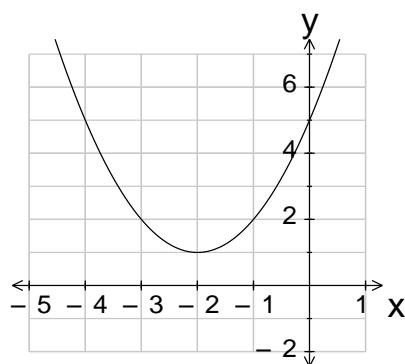


7. Find the equation of each of these parabolas in the form $y = (x + a)^2 + b$.

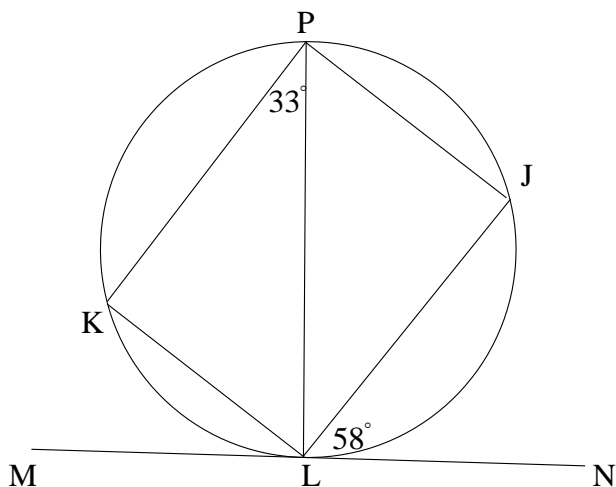
(a)



(b)



8. MN is a tangent to the circle and PL is a diameter.
 $\angle JLN = 58^\circ$ and $\angle KPL = 33^\circ$.
 Find the size of $\angle KLJ$.



9. Draw a sketch of the parabola with equation $y = x^2 - 2x - 9$.
 Your sketch should show the coordinates of all intersections with the axes and also the coordinates of the turning point.
 Write down the equation of the axis of symmetry of the parabola.